INTERNET AFFIDAVIT

Of

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On Behalf of Cable & Wireless, Inc.

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INTRODUCTION

My name is Alan Pearce and I am President of Information Age Economics Inc. ("IAE"), a Washington D.C.-based research and consulting firm. I founded IAE in March 1978 after serving for approximately eight years in senior-level positions with the U.S. Government, first as Chief Economist and Special Assistant to two FCC Chairmen, Dean Burch and Richard Wiley, then as Chief Economist of the House of Representatives Telecommunications Subcommittee, under the Chairmanship of Cong. Torbert H. Macdonald and Cong. Lionel Van Deerlin, and finally as Senior Telecommunications Economist and Policy Adviser in the Executive Office of the President. I have bachelor's and master's degrees from The London School of Economics and Political Science, University of London, and a Ph.D., in business and telecommunications from Indiana University.

I have been retained by Cable & Wireless, Inc. (sometimes referred to as "C&W") to research and draft a paper outlining the effects on competition, customers, prices, and technology stemming from the proposed merger of MCI-WorldCom and Sprint, focusing specifically on top-level Internet connectivity, i.e., those who achieve universal Internet connectivity entirely through their own backbone networks or via peering arrangements with other top-level Internet Service Providers ("ISPs"). This market is distinguishable from the position of secondary peering ISPs (who peer with some though not all of the top-level ISPs, and also rely on transit arrangements), and "resellers" (who rely entirely on transit arrangements with top-level ISPs). Unlike peering arrangements, the transit arrangements used by secondary ISPs and "resellers" are fee-based. The Federal Communications Commission ("FCC" or "Commission"), has previously defined Internet backbone services "as the transporting and routing of packets between and among ISPs and regional backbone networks." The Commission has agreed that Internet backbone "constitutes a separate relevant product market."[1]

As a result of my research and analysis, I have concluded that, if the merger of the MCI-WorldCom and Sprint Internet backbone is approved by the Commission, the combined entity will be in a position to create a near monopoly of Internet backbone services, resulting in a plethora of negative effects on the marketplace, technology, the public, and the overall economy. Combining the Internet backbones of MCI-WorldCom and Sprint will give the combined entity a market share of between 50 and almost 70% of Top Level or Universal Internet Connectivity

resulting in dire consequences for competitors, customers, and technology. It is absolutely essential that a competitive Internet backbone market be preserved and maintained in the U.S. and globally because the backbone is the heart of soul of the Internet and the World Wide Web, upon which much of America's economic recovery from the mid-1990s to date is based. Therefore, there are compelling public interest reasons to condition the merger of MCI-WorldCom and Sprint on the divestiture of UUNet, MCI-WorldCom's dominant Internet backbone entity, with a market share variously estimated at between 39 and 57%. The divestiture of Sprint's Internet backbone, with a 10-11% market share, would not be a sufficient remedy since it would be similar to, and possibly identical to, that proposed two years ago when MCI was ordered to divest its Internet backbone as a pre-condition for its merger with WorldCom. The divested entity was bought by C&W and MCI, because it was an unwilling seller, effectively sabotaged the deal.[2] In the event that a divestiture of UUNet is not ordered, then the FCC must confront the awesome, and perhaps unpalatable task, of intensive, rigid, and ongoing regulation of the intricate and complex business relationships by and among top level Internet backbone providers, along with those of second-level ISPs, smaller ISPs, and an ever increasing number of large and small customer relationships. Clearly, the simplest and most effective option is the complete divestiture of UUNet.

PART I.   THE RISE OF THE INTERNET

The Internet is a network of networks with common standards, interoperability and an increasing array of economic and business, social, educational, and political benefits. Yet a generally accepted method of economic analysis of the Internet is increasingly difficult as the Internet grows in size, scale, scope, and global influence. The Internet has brought about what has been predicted and anticipated for the past 30 years: That the world is entering a digital information age where video, audio, and interactive multimedia converge and will be available to everyone at reasonable cost.

Nonetheless, there are two myths involving the Internet:

> 1.   That it is paid for by the U.S. Government. The U.S. Government was a critically important pioneer investor in, and has always been a major user of, the Internet, but it has never shouldered the entire cost of the Internet and no longer actively funds it or its development. Although the U.S. Government has helped

fund the Internet in the past, any financial support today has been relegated to that of a major user which must pay for its use just like every other entity or person.

2.   It is free. Indeed, the costs of providing Internet service are significant. They include capital equipment (routers, et al.), transport (provided by telephone companies and Internet backbone providers), customer service, operations, and other expenses. Subscriber costs for using the Internet vary widely, depending upon the amount of bandwidth required along with a number of other factors. Residential customers, for example, have a single point of access although they can use multiple access methods, i.e., dial tone, ISDN, xDSL, wireless and cable, while corporate and government customers have multiple options of complexity, speed, service, and protocol. Internet congestion points and network reliability are other costs that require much more research.

Pricing of Internet services is a topic of growing interest and concern to those who place a heavy reliance on the Internet to conduct business, also known as e-commerce. Now that the economic, business, educational, social, cultural, and technical importance of the Internet has become firmly established, fundamental economic questions are finally being posed and addressed.

This paper focuses almost exclusively on Internet backbone issues. The Internet backbone is the lynchpin of the Internet and the World Wide Web. Indeed, the backbone is appropriately named because all functionality associated with the Internet stems from it and flows through it. Therefore factual information relating to the development of the Internet Backbone; the Internet Backbone Industry Structure, including the dominant firms and their market shares; and finally whether concentration of ownership of Internet Backbone facilities pose a serious threat to competition, customers, prices and technology must be considered carefully by policy makers before deciding whether or not to let MCI/WorldCom acquire Sprint.

PART II.   DEVELOPMENT OF INTERNET BACKBONE: AN OVERVIEW

1.   Internet Backbone Facilities in the U.S.

As originally conceived by the DARPA and continued by the NSF, the Internet backbone was to be a single network operated by a single entity. This intent – or policy – changed

dramatically when the NSF withdrew from funding the Internet. The backbone then became a public, commercial network technology.

The importance of the Internet backbone has grown exponentially. Under the NSF, the NFSNET grew from 100,000 hosts to over one million. Since 1995, which many regard as the commercial beginning of the Internet, service has been provided by a hierarchy of local, regional and national (also called top level or tier one) Internet Service Providers ("ISPs"), maintaining connectivity to everyone and from any point to any point on the Internet. Today there are 72.4 million hosts and a wide array of services.[3] The growth of the Internet and World Wide Web has been geometric, not arithmetic. The increasing popularity of the Internet in the U.S. and abroad guarantees a continuation of rapid growth rates along with a wide array of new services and ideas in the future. Today the Internet and World Wide Web are regarded as indispensable to almost every aspect of our daily lives. In short, the Internet is pervasive, and at its central core lies the backbone.

During the early period when the Internet served educational and research establishments along with governmental institutions, the regional network providers charged a monthly subscription, and those regional network providers, also referred to as ISPs, paid the telephone companies for private lines. In this period the National Science Foundation ("NSF"), paid around $20M a year to Advanced Networks and Services ("ANS") in order to fund and manage the NFSNET backbone. Traffic crossed network boundaries on a non-fee basis, while non-education and non-research traffic was assessed a "surcharge" to use the NFSNET.

Today, that model of operation no longer exists. Now millions upon millions of businesses, educational and research institutions, governments, and individuals pay monthly subscriptions to ISPs and also pay the telephone companies for local, dedicated service. In turn, the ISPs pay the telephone companies for transport facilities and the Internet backbone companies for backbone connectivity and route advertisement. The backbone owners – primarily MCI/WorldCom, Sprint, GTE, and Cable & Wireless – pay private and public peering point operators, e.g., Metropolitan Area Exchange ("MAE"), or Commercial Internet Exchange ("CIX") for placement of routers at major exchange points. Local and regional ISPs purchase their Internet backbone capacity from what are sometimes referred to as the top-level ISPs, i.e.,

MCI/WorldCom, et al. In short, the Internet is becoming very big business for those companies that have backbone facilities and customers.

Local ISPs inform the backbone providers the addresses that must be served. The backbone providers meet at public and/or private peering points to exchange packets between the different networks. Private peering is negotiated by and among the different backbone providers, usually on a pairing basis. Public peering is done at the MAE, CIX or the Network Access Points ("NAP").

Although the Internet backbone has been operationally defined as a collection of routers, switches, fiber links, and other hardware, it is much more than that. Developments currently underway are turning the Internet backbone into a bandwidth and feature-rich resource, with major new investments needed in order to support the increasing array of services and associated traffic as demand for backbone explodes over the next three-to-five years. Continued business and economic development, both in the U.S. and globally, are increasingly dependent on the Internet backbone. Experts agree that Internet backbone service represents a product market because there are no acceptable demand substitutes for ISPs and other backbone service providers to obtain national Internet access if a hypothetical backbone monopolist were to raise its connection price above competitive levels.[4]

Internet backbone capacity can be increased in several ways:

1. The installation of new fiber. But this is expensive, time-consuming, and often creates problems with local authorities because of state and local franchise requirements and traffic congestion caused by street digging and road closures or diversions.

2. Increasing transmission speeds. Most backbones operate at OC-48 (2.5 Gbits/s). New technological developments, made economically viable only to the largest backbone operators, are making it possible to transmit at OC-192 (10 Gbits/s) and even OC-768 (40 Gbits/s).

3. The use of Wavelength Division Multiplexing ("WDM"), which allows the capacity of the existing fiber to be increased substantially by using existing terminal equipment.

The need to create more bandwidth is well recognized by MCI/WorldCom. John Sidgmore, the head of UUNet, has said that his backbone (the world's largest and most developed) doubles in bandwidth every three-to-four months.[5]

Because of the pervasiveness of the Internet, a small number of global network providers have emerged, the largest by far being MCI/WorldCom, via its UUNet subsidiary. The rapid rise of the global backbone providers is premised on a well founded assumption that the largest revenue potential is at the "top end" of the industry where a small number of companies will offer high quality, guaranteed services to the top 100 global companies. Network providers like MCI/WorldCom, through UUNet, will offer the best prices because it owns the infrastructure, can keep, maintain, and enlarge its customer base, and can earn profit margins that are 10% or better than stand-alone Internet backbone providers. Furthermore, industry analysts say that the cost of transferring a terabyte (a million Megabytes) of data across the Internet backbone will fall dramatically over the next few years. In 1998, the cost was around $81,000; during 2000 the cost will be reduced by 89% to only $8,700; by 2003, the cost could collapse to $3,000, only .3% of the cost in 1998. Lower costs will not result in lower revenues or lower profits, especially for a dominant company like MCI/WorldCom. Revenues will increase rapidly because the backbone will be capable of handling dramatically increased demand not just from its major customers, but also from new customers who are demanding Internet backbone capacity. Finally, UUNet, because of its size and scope, will continue to lease its global backbone to other ISPs. As a result, MCI/WorldCom will be able to maintain and even strengthen its dominant global Internet backbone position well into the Third Millennium.

An important factor differentiates the Internet backbone from the public switched telecommunications network ("PSTN"). With the PSTN, local exchanges developed first and were then linked to long-distance connections. The Internet, on the other hand, began as a worldwide and nationwide network linking relatively few users. Consequently, major "pioneer" backbone operators such as UUNet, especially when combined with a global giant like MCI/WorldCom, can develop an almost unassailable market position. Today, as the Internet spreads rapidly with more and more local connections, MCI/WorldCom is again able, via UUNet, to maintain and expand its increasingly valuable customer base.

According to industry estimates, the worldwide Internet backbone market in 1998 was $8.3B. This should reach $20B by 2002, with an increasing contribution from Europe and the rest of the world.

Backbone revenues are projected to rise for the following reasons:

1.   A rapid rise in the number of people using the Internet;

2.   Increasing bandwidth usage, especially when more advanced applications are made available;

3.   An increasing use of IP technology in the U.S. and throughout the world;

4.   The introduction of an array of new services and applications, for example Third Generation ("3G") wireless.

5.   Trend away from "free" peering by the dominant backbone providers, for example MCI/WorldCom.

6.   The deployment of new broadband access technologies, for example Digital Subscriber Loop ("DSL") and cable modems.

2.   Internet Backbone Facilities Abroad

Internet backbone capacity in Europe and elsewhere lags way behind that of the U.S. Indeed, major global corporations and even major overseas telecommunications companies, rely heavily on U.S. Internet backbone providers, and most importantly UUNet, to handle their global broadband data needs.

In Europe and other areas of the world Internet backbone is largely provided by the incumbent carrier, usually a nation state owned monopoly that it slowly being privatized. The largest ISPs are either subsidiaries of the incumbent carriers or are being acquired by U.S. companies, such as MCI/WorldCom. The European Internet infrastructure, therefore, relies predominantly on links to the major Internet backbones of U.S. companies, primarily MCI/WorldCom (UUNet) and Sprint. This is due in part to the high prices charged by most of the former telecommunications monopolies, e.g., Deutsche Telekom, France Telecom, Telecom

Italia, among others, and in part because of better quality, performance, and reach of companies like MCI/WorldCom.

Because of Europe's reliance on U.S. Internet backbone companies, the European Communities ("EC") has been an active regulatory force in mergers that involve Internet backbone. Indeed, it was the EC that insisted that MCI spin off its Internet backbone before approval was given for its merger with WorldCom. The EC is closely scrutinizing the planned MCI/WorldCom acquisition of Sprint.

3. Internet Backbone Industry Structure

Internet backbone capacity in the U.S. and abroad is provided by relatively few companies which can be divided into two categories, the incumbents, with mature backbones already in place, and the challengers, with backbones under construction. By any measure, the world's largest Internet backbone provider is MCI/WorldCom. Sprint is a major player, particularly in the U.S., where the market is developing rapidly.

Major Incumbent Backbone Providers
MCI/WorldCom (UUNet)
Sprint ION & Global One (a combination of Sprint-Deutsche Telekom- France Telecom, now being dissolved)
GTE (Maybe "sold" as a result of merger with Bell Atlantic)
C&W (from MCI in 1998)
AT&T (as a result of its acquisition of Teleport Communications Group and the purchase of the Internet backbone assets of IBM)
PSINet
The Challengers
BT/AT&T/TCI/MediaOne
Qwest
Level 3
Williams Companies
Frontier-Global Crossing
Broadwing (a combination of IXC and Cincinnati Bell)
Fiber Network Operators in the U.S.
(a) In operation
MCI/WorldCom
Sprint
AT&T
(b) In partial operation and under construction

Qwest
Level 3
Williams Cos.
GTE
Frontier-Global Crossing
Fiber Network Operators in Europe
(a) In operation
MCI/WorldCom
BT (now involved in "global" joint venture with AT&T)
Hermes Euro Railtel
(b) In partial operation and under construction
Sprint
Global One (Sprint-DT-FT)
KPN/Qwest (KPN is the incumbent carrier in The Netherlands)
Global Crossing
European IP Networks
UUNet Europe
Global One (Sprint-DT-FT)
EUNet (Qwest)
NORDUnet (The Scandinavian Internet backbone connecting Stockholm, Oslo, Copenhagen, and Helsinki)

It should be noted that the state of network build-outs both in the U.S. and overseas varies considerably, with some companies attracting vast sums of money from investors for little tangible infrastructure. Furthermore, the development of services based on newly built infrastructure is hampered by lack of peering agreements, and, of equal importance, customers.

Because of the dominance of a few companies, there is an increasing focus on regulation of Internet backbone, particularly in Europe and Asia. European regulators are also concerned that the dominance of a few will result in anti-competitive behavior.

4. Measuring Market Shares

In investigating the merger of MCI's and WorldCom's Internet backbones in 1998, the European Communities ("EC") looked at several possible methods of measuring market share, including revenue generated, traffic flow, aggregate capacity in interconnecting links, numbers of addresses reachable, numbers of points of presence ("POPs"), and actual bandwidth used for traffic exchange. After an exhaustive study, the EC concluded: "There is little doubt that the

combined entity (MCI and WorldCom) would hold over 50% of the market, however widely defined. The combined entity would be significantly larger than the size of its nearest competitor (Sprint) on either revenue or traffic flow, bearing in mind that the next competitor, the GTE group, is about half the size of Sprint."[6]

Furthermore, every recognized authority and research company that regularly measures the market share of the major Internet backbone providers agrees that MCI/WorldCom is already the dominant entity, and is, in essence, without peer. This means that weaker or emerging competitors of MCI/WorldCom confront an unsolvable business dilemma: they need more traffic to peer, but are unable to win that traffic without peering.

As noted, there are several ways of measuring market shares in the Internet backbone business, but data are not always easy to uncover because they are closely guarded by the major players.

(1)   **Market Share By Revenue**

Revenue data are easier to assemble than any of the other categories, so any detailed analysis of Internet backbone market share should begin with, and rely heavily upon, revenues generated.

According to the FCC, the Internet backbone market consists of "transporting and routing of packets between and among ISPs and regional backbone networks."[7] Backbone services include wholesale and business retail revenues received from providing access to the Internet. It includes revenues from software and value-added services such as Web hosting, VPN (virtual private network) and security. MCI/WorldCom holds a clear lead in this market. Sprint, AT&T (via its acquisitions), GTE/BBN and C&W also participate. America Online is not a player because it relies primarily, though not exclusively, on MCI/WorldCom.

Although the collection of hard data is difficult, MCI/WorldCom is number one in all categories. Acquisition of Sprint's Internet backbone would only serve to strengthen and consolidate its domination of Internet backbone.

According to Bernstein Research: "With the acquisition of UUNet in 1997 and ANS/CNS in 1998, MCI WorldCom is without peer across the Internet backbone services markets,

commanding about a 40% share of the combined Internet wholesale and business retail markets."[8] Indeed, the front cover of the research report makes the following pertinent points:

* MCI WorldCom is peerless in the highest-growth telecom businesses: Internet, data, competitive local and international.

* Total data businesses are set to grow at a 24% rate through 2003 driven by 35% growth in Internet services.

Internet traffic is predicted to account for a third of MCI/WorldCom's gross profit growth. MCI/WorldCom's 1998 Internet gross profit of $1.1 billion is expected to quintuple by 2003. Bernstein Research asserts that MCI/WorldCom will leverage "powerful economies of scale and scope inherent in providing facilities-based IP services to price competitively and stimulate increased usage of the Web, both private and public."[9]

Domestic Internet Backbone Services: Market Shares By Revenue				
Company	Revenue ($B)		Market Share	
	'98	'99 E	'98	'99 E
MCI/WorldCom (includes UUNet, ANS/CNS)	$1.9	$3.2	39%	37%
GTE/BBN	$0.77	$1.3	16%	15%
AT&T/TCG/CERFNet and IBM	$0.5	$0.9	11%	10%
Sprint	$0.5	$0.7	10%	8%
C&W (formerly MCI)	$0.35	$0.5	7%	6%
PSINet	$0.18	$0.3	4%	4%
Other	$0.7	$1.7	14%	20%

Source: Corporate Reports and Bernstein Research. Note: These data are a conservative estimate and do not incorporate MCI/WorldCom's recent revenue surges.

It is clear that MCI/WorldCom is the dominant Internet backbone provider, with two-and-half times the market share of its closest rival, GTE-BBN, an Internet backbone that faces an uncertain future because of U.S. government restrictions that are likely to be placed on the ownership of the backbone prior to GTE's merger with Bell Atlantic. Finally, the data outlined above could be extremely conservative, at least according to a report in Barron's dated September 20, 1999. In an article entitled "Changing the 'Net: Forget long distance," author

Robin Goldwyn Blumenthal asserted that MCI/WorldCom "carries an estimated 50% of the world's Internet traffic."

Indeed, MCI/WorldCom's fourth quarter profits surged just recently. Even topping Wall Street expectations, MCI/WorldCom's fourth quarter net income was $1.3 B or 44 cents per share, compared with net income of $443 M or 15 cents a share a year ago. More than 80% of its revenue growth came from data, Internet and international services. Internet revenues alone jumped 55% to $1.0 B. There are reports that MCI/WorldCom will issue a specific Internet-tracking stock to further reap the benefits of its Internet market presence. These phenomenal profit margins have led MCI/WorldCom to even consider changing its traditional voice-centered business plan to an Internet-based plan.[10]

In its 1998 report, the EC noted that:

> * In March, 1998, Sprint Corporation estimated that, based on survey data compiled by Boardwatch magazine, the MCI/WorldCom combined Internet backbones would have about 55% of all backbone connections after the merger.
>
> * The Maloff Group in October, 1997, estimated that the combined entity (MCI and WorldCom) would have 68% of Internet revenue.
>
> * Bell Atlantic summarized the market shares of the merging companies at 60% based on press reports, and estimated combined shares at 58% based on share of customer routes using routing tables.
>
> * GTE estimated a combined market share of 47% of total bandwidth for the merging parties, based on reports in Boardwatch magazine. (op cit, p. L116.17).

Finally, International Data Corporation's 1999 analysis of the wholesale Services Revenue Shares lists the following:

Company	Wholesale Services Revenue Share
MCI/WorldCom	56.7%
GTE	12.1%
Sprint	11.2%
Qwest	6.0%
Level 3	3.3%
Splitrock	2.3%

PSINet	1.9%
Cable & Wireless	1.7%
Others	1.8%

Source: 1998 ISP Market Review and Forecast 1998-2003, at 2, 17, published by IDC.

Wholesale services are provided by top level Internet backbone providers who lease capacity to lower tiered ISPs and resellers, generally via transit arrangements. Wholesale agreements effectively lease the carriage components of the operation without the bundling of other services normally associated with the retail operations. The wholesale process allows top level backbone providers to gain higher volumes of carriage capacity and in turn allows lower level ISPs and resellers to gain access to lower unit costs of transmission from carriage providers.

(2)   **Amount of Investment**

MCI/WorldCom has invested aggressively in Internet backbone facilities in the U.S. and Europe. Today, its backbone facilities not only blanket the United State but also link the major European centers, including London, Dublin, Paris, Frankfurt, Zurich, Brussels, Amsterdam, Madrid, Barcelona, Stockholm, Copenhagen, and Oslo. In turn, this network is linked into Asia via hubs in Hong Kong, Tokyo, and Sydney. Moreover, this expansion is going to continue. According to Bloomberg News, September 1, 1999: "MCI Worldcom Inc., the No. 1 global provider of Internet services to corporations, said it expects to be able to serve close to all of the global market for Internet activity in the next eighteen months." This puts MCI/WorldCom way ahead of the pack.

Peter Van Camp, UUNet's President of Internet Markets, told a Bloomberg Forum: "(Our Internet bandwidth growth rate in 1999) will be ten times on the previous year and we see no signs of it slowing down...Our actual capacity requirement for the Internet has doubled every three to four months and we are building our network accordingly. There really isn't anyone with our network and reach. AT&T and British Telecom are trying to expand their networks but today the reach of our network is the lead we have, and we are investing $2 million a day in it."

Van Camp said that Internet sales in the second quarter of 1999 rose 59.2% to $836 million, accounting for 10% of MCI/WorldCom's total sales. The company spent $396 million

on its Internet business in the quarter, and added 1,000 buildings that connect to customer locations, taking its total to 7,500. Investments are sure to increase at an even faster pace in light of MCI/WorldCom's recent profit almost tripling, with Internet revenues rising to $8.8 B.[11]

For the most part, MCI/WorldCom's competitors have either avoided overseas investment in facilities entirely or have formed alliances and joint ventures that, in some cases, have had to be dismantled, e.g., Global One and AT&T's aborted UniSource.

According to Barron's, September 20, 1999, MCI/WorldCom increased capital spending by $1.4 billion during 1999 to about $7.9 billion. MCI/WorldCom President and CEO Bernie Ebbers, according to Barron's, said that the money would go toward building proprietary Internet and telecommunications networks in Europe and Asia, markets that are growing even faster than those in the U.S.

John Sidgmore, noting that MCI/WorldCom owns almost all of its own fiber, and adds that there is a direct correlation between cost of facilities and the growth of the Internet, which is about to explode in Europe and elsewhere. Sidgmore further states that MCI/WorldCom is "by far the largest Internet player in Europe."[12] To realize the overwhelming extent of MCI/WorldCom, UUNet and Sprint's network, refer to a map of its network attached at Exhibits 1, 2 and 3 respectively.

(3) Traffic/Customers

The MCI/WorldCom Internet backbone combines wholesale, small and medium business retail, and the value-added high end of the business.

MCI/WorldCom, with wholesale contracts from America Online ("AOL") and Microsoft Network, has the leading share of this part of the Internet backbone. This position could be advanced as a result of the AOL-Time Warner merger. Vinton Cerf, the Internet pioneer who is now senior vice president of Internet architecture for MCI/WorldCom, was quoted in The Wall Street Journal of January 31, 2000, as saying that the proposed merger of AOL and Time Warner will mean far more "streaming video" or TV-like images over the Web, among other things. That, said Cerf, will trigger demand for more bandwidth, stimulating cable TV and wireless companies to offer competing Internet services, thus speeding the deployment of Internet appliances in cars, inside factories, or even sewn into clothing. Cerf says that

MCI/WorldCom has a "pick and shovel" strategy, going back to the days of the gold rush when many of the miners never became rich but those who sold them tools did. Cerf is suggesting that no matter what happens, as services grow, MCI/WorldCom's Internet backbone will prosper because it represents today's picks and shovels.[13]

UUNet claims that it offers services to more than 70,000 business customers worldwide, while Advanced Networks, which has recently been integrated with UUNet, says it serves more than 3,300 global companies through fully integrated, supported and managed Internet, intranet and extranet services. Advanced Networks also claims to be a global provider of integrated networking and hosting services to 114 countries around the world. MCI/WorldCom's Internet backbone is already the backbone of choice for Multinational Corporations ("MNCs"), who are risk averse and cannot rely on Information Technology ("IT") companies and regional telephone companies and ISPs in alliance with one another. Such alliances generally do not afford the absolute network reliability that MNCs demand. Consequently, MCI/WorldCom has a strong grip on its customer base, customers who would be hurt if they decided to switch to a weaker and/or smaller Internet backbone provider.

Communications Week International, citing measurements from WorldCom, said that WorldCom and Sprint have a 53% share of traffic travelling to the top 100 websites.[14] Similarly, the combined entity will have clear majority backbone market share based on routes:

Company	Number of Internet Backbone Routes
UUNet	25,000
Sprint	20,000
C&W	17,000
AT&T	13,000

Source: Interconnection Strategy: The Free Rider Problem, October 11, 1999.

(4) Points of Presence

The Charles River Study[15] tends to minimize the importance of POPs as a good measure of market share. Nonetheless, since some experts enumerate POPs as one measure of market power it is worth noting that MCI/WorldCom, at the time it announced the combining of the operations of UUNet and Advanced Networks into one organization, claimed that the newly created entity would have 1,100 POPs and would continue to expand those POPs rapidly. UUNet now brags of having "over 2,000 " POPs.[16] Sprint has over 500 POPs.[17] The number of POPs merely indicate the number of locations from which the backbone can be accessed. Arguably, the more access points a backbone has, the better it can serve its customers.

In summary, MCI/WorldCom dominates the Internet backbone market by any measure – revenues, investment, customers, bandwidth, and POPs. And, according to the EC, Internet backbone is "effectively one global market." Furthermore, the top level players have their centers of operations in the U.S.A. and are the only providers of transit to all points of the Internet. The EC also points out that UUNet has retail level subsidiaries in many European countries.[18]

PART III.   COMPETITIVE ANALYSIS

1.   Herfindahl-Hirschman Index Analysis

In 1992, the Department of Justice ("DOJ") and the Federal Trade Commission ("FTC") issued horizontal merger guidelines that antitrust enforcers have used to judge the competitive effects of proposed mergers.[19]

The guidelines are based on a measure of market power commonly known as the Herfindahl-Hirschman Index ("HHI"). The index is calculated by summing the squares of the individual market shares of all firms participating in a particular market. In evaluating a horizontal merger – where, for example, the nation's leading Internet backbone provider proposes to buy out the fourth – the DOJ labels markets with a post-merger HHI in excess of 1800 as "highly concentrated."

The guidelines further stipulate that "where the post-merger HHI exceeds 1800, it will be presumed that mergers producing an increase in the HHI of more than 100 points are likely to

create or enhance market power or facilitate its exercise." The HHI associated with the combination of MCI/WorldCom's Internet backbone with that of Sprint is well in excess of the DOJ/FTC guidelines and, thus, trigger a presumption of market power as well as the potential for price increases in all relevant Internet backbone market segments in which MCI/WorldCom operates.[20]

Impact of Merging MCI/WorldCom's and Sprint's Internet Backbones	
Pre-Merger	1,774
Post-Merger	2,266
Increase	492

Source: HHI calculated from market share data reported in MCI WorldCom: Positioned to Win in a Data-Driven World, Bernstein Research, March 1999. In should be noted that Bernstein Research data are regarded as conservative. Other research organizations give MCI/WorldCom a higher market share.

2. HHI Implications

The results derived from the HHI are clear and unequivocal. Based on the HHI analysis, the consolidation of MCI/WorldCom's Internet backbone with that of Sprint should be disallowed.

Fortunately for MCI/WorldCom, the HHI guidelines provide a process for overcoming an anti-competitive presumption, but the onus is on MCI/WorldCom. It involves a three-step showing that a "merger is not likely to create or enhance market power or to facilitate its exercise if entry into the market is so easy that market participants, after the merger, either collectively or unilaterally could not profitably maintain a price increase above pre-merger levels."

* Step One assesses whether a new entrant can achieve significant market impact within a timely period.

* Step Two addresses whether a new entrant would be profitable enough to compete with the merged company in question. Here, the guidelines stipulate that for firms entering markets that require significant sunk costs, such as the construction of a fiber Internet

backbone with associated software, routers and switching equipment, the profitability of that entry must be evaluated on the basis of long-term participation in the market. This is "because the underlying assets will be committed to the market until they are economically depreciated." If new entrants cannot compete profitably over the long haul, they cannot be counted on to "cause prices to fall to their pre-merger levels or lower."

* Step Three seeks information to demonstrate that "timely and likely entry would be sufficient to return market prices or profit margins to their pre-merger levels." The guidelines further state that "this end may be accomplished either through multiple entry or individual entry at a sufficient scale. Entry may not be sufficient, even though timely and likely, where the constraints on availability of essential assets, due to incumbent control, make it impossible for (the new entrant to profitably) achieve the necessary level of sales."

Can MCI/WorldCom overcome the Internet backbone HHI associated with its acquisition of Sprint? Market circumstances suggest that MCI/WorldCom's case will be tough to make. Indeed it is abundantly clear from the analysis of Charles River Associates and the EC, summarized below, that a merger of the Internet backbones of MCI/WorldCom and Sprint should be disallowed.

3.   The Dominance of MCI/WorldCom: Pre and Post Merger

As already demonstrated, MCI/WorldCom clearly dominates the market for top level Internet backbone facilities. In fact, International Data Corporation ("IDC") notes that MCI/WorldCom has "clear predominance" in the Internet business and wholesale markets. Furthermore, IDC, an internationally known research organization focusing on the telecommunications-information industry, states that MCI/WorldCom's share of ISP wholesale revenues stands at 56.7%.[21] The same publication lists Sprint with an 11.2% share, representing a combined share of 67.9%.

Renaissance Worldwide and Pioneer Consulting has estimated MCI/WorldCom's global market share of World Wide Web traffic at 50%, even before combining with Sprint.[22] Sprint, when it filed comments with the FCC in connection with the MCI and WorldCom merger, said that 54% of all non-backbone ISPs would be connected to WorldCom if it merged with MCI.[23]

Datamonitor Report has estimated that the combined entity would have at least a 48% share of Internet traffic.[24]

Even before any merger with Sprint, MCI/WorldCom has maintained and has even strengthened its dominance in the Internet backbone market. Indeed, an official of MCI/WorldCom recently said: "There really isn't anyone with our network and reach."[25]

Not only is MCI/WorldCom dominant, it appears to be dismissive when considering its competitors. For example, MCI/WorldCom Vice Chairman John Sidgmore says that AT&T is "trying to become net-centric" but still has "a long way to go."[26] Furthermore, IDC has noted that "it is clear that internetMCI has less impact as a Cable & Wireless company than as the IP subsidiary of MCI."[27]

MCI/WorldCom repeatedly postulates that "mirroring" and "caching" affect the Internet backbone market by increasing or strengthening competition. These assertions are spurious arguments since neither has anything to do with Internet backbone competition or the lack of it. Mirroring is a term used to reference Internet sites that copy files from other archives every day or so. Accessing a mirror site close to your location is said to reduce transmission over the Internet. Nonetheless, these files have to be updated periodically and an increasing amount of Internet traffic focuses on immediate and continuously updated information. In the context of the Internet and the World Wide Web, caching (from the word cache) refers to data that can be stored, or cached, in a server which is close to you. Therefore the data are accessible more quickly than if it has to be transmitted across the entire network each time you need it. If anything, mirroring and caching merely assist the local or regional ISPs, which, in turn, depend on the major Internet backbone providers such as MCI/WorldCom and Sprint. Therefore the effect on competition is zero.

Similarly, MCI/WorldCom raises the argument that multi-homing may limit the ability of a backbone provider to raise the price of transit by providing competitive alternatives. This, too, is fallacious. Multi-homing occurs when an Internet user is connected to, and utilizes the services of, more than one Internet backbone provider. The theory of multi-homing, it is assumed, is that the client can play one Internet backbone provider off against another. The implication of multi-homing is that MCI/WorldCom customers can easily and at low cost connect to multiple backbone providers. If a significant number of MCI/WorldCom customers

did this, the number of Internet addresses available only through MCI/WorldCom would be relatively low. Thus MCI/WorldCom's competitive power would diminish, reducing or eliminating its ability to threaten to degrade its competitors quality of interconnection, or to disconnect entirely from competitive backbone providers. But Sprint and others have provided considerable evidence that multi-homing is not a common practice among ISPs, is neither easy nor cheap, and is insufficient to mitigate MCI/WorldCom's dominance.[28]

It is clear that MCI/WorldCom has the ability – and even the incentive – to impede multi-homing by a variety of strategies, including refusal to deal with multi-homing customers, degradation of interconnection or refusal to offer the protocol needed to multihome, or simply by offering volume discounts designed to favor higher usage single-homed customers and discourage multihomed customers. In fact, rather than encourage competition, the reverse effect would occur. Multi-homing would tend to further entrench MCI/WorldCom's market dominance, not diminish it, because MCI/WorldCom (and Sprint, if merged into it) has such a large market share and a larger proportion of content and end points on its network compared to the next largest backbone, that customers served by MCI/WorldCom have little incentive to multihome. Conversely, customers not served by MCI/WorldCom have the strongest incentive to multihome to the largest entity, namely MCI/WorldCom.

Sprint's Backbone

Sprint's Internet access service has 500 points of presence ("POPs") in more than 170 countries worldwide, 100% four-fiber, bi-directional, line-switched ring SONET (synchronous optical network) fiber-optic backbone, "robust Cisco" gigabit switch routers ("GSRs") which enhance the performance across the network, and packets are routed at industry-leading packet-over-SONET OC12 speeds for greater response rime and reliability.[29]

Sprint's IP services group provides wide area network ("WAN") service for customers requiring Transmission Control Protocol/Internet Protocol ("TCP/IP") networking and access to the global Internet. Sprint's commercial SprintLink service was conceived and planned after Sprint was awarded a cooperative agreement with the NSF in January, 1991, to act as NSF International Connections Manager ("ICM"), responsible for implementing and operating a TCP/IP-based router network service connecting the domestic NSF network ("NSFnet") with research and education networks overseas.

Initially, Sprint provided connectivity to research networks in Stockholm, Sweden, and Sophia Antipolles, France. Today, the network extends to London, Paris, Tokyo, Bonn, Malaysia, South Africa and the Middle East. Sprint remains the ICM in the aftermath of the NSFnet decommissioning in April, 1995. Sprint offers high-speed connections to the Internet in 28 countries worldwide and claims more international connections than any other carrier.

In 1996, Sprint became a partner in Global One, a joint venture of Deutsche Telekom AG ("DT") and France Telecom ("FT") to provide global telecommunications services, including IP connections to business, residential and carrier markets worldwide. Sprint is a one-third partner in Global One's operating group serving Europe, excluding France and Germany, and is a 5% partner in Global One's operating group for the worldwide activities outside the U.S. and Europe. Sprint has recently announced the proposed sale of its interest in Global One to France Telecom.

EarthLink Network, Inc. and Sprint completed a long-term strategic alliance under which Sprint bought a 30% share of the national dial-up provider. The alliance enables Sprint to continue to build its brand recognition in the Internet market and deliver Internet access services to its large telecommunications customer base while focusing on its marketing and networking capabilities. Sprint, and if the merger is approved, MCI/WorldCom, will benefit from the recent merger of EarthLink and MindSpring, creating the second largest U.S. ISP, with 3 million subscribers.

UUNet

UUNet, the Internet backbone arm of MCI/WorldCom, was founded in 1987. UUNet offers a range of access options, World Wide Web hosting services, security products and consulting services to more than 70,000 business customers worldwide. UUNet has formed strategic alliances with EarthLink (which is closely associated with Sprint), Microsoft, GTE, Nielsen Media Research, U.S. Connect, U.S.A. Networks and many other major companies in a range of industries, is the official Internet provider of The Microsoft Network, and the primary provider for AOL.

UUNet has already acquired several other companies, including Internet providers outside the U.S., e.g., Great Britain, Canada, Germany, the Netherlands, France, Belgium, and Australia. The backbones of these subsidiaries are interconnected to the UUNet global Internet

backbone. UUNet WorldCom's global networks, including its pan-European network and transoceanic cable systems, provide high-capacity connectivity to more than 35,000 buildings worldwide. The company says it has POPs in over 24 countries and continues to add cities and countries.

There are approximately 200 active core switching/access facilities, or hubs, deployed throughout UUNet's U.S. backbone. The backbone has three separate layers – national, regional, and hub.

In January, 1998, MCI/WorldCom acquired the CompuServe Network Services division from H&R Block in a stock-for-stock transaction valued at about $1.2 billion. In addition, MCI/WorldCom agreed to acquire Advanced Networks Communications ("ANS") from America OnLine ("AOL"). WorldCom Advanced Networks was formed in Mary, 1998, from the combined assets of CompuServe Network Services, ANS Communications, GridNet International and the Web services business unit of UUNet Technologies. The division was renamed MCI/WorldCom Advanced Networks in September, 1998, following WorldCom's acquisition of MCI Communications.

Advanced Networks serves more than 3,300 global companies through fully integrated, supported and managed Internet, intranet and extranet services. Advanced Networks is a global provider of integrated networking and hosting services to 114 countries around the world.

In March, 1999, MCI/WorldCom announced that it was combining the operations of its UUNet and Advanced Networks subsidiaries into one organization. The two companies operate IP backbones that make up a portion of the global Internet. By unifying the two entities MCI/WorldCom increased its ability to offer worldwide services over an integrated global Internet network. The combined entity claims to have more than 1,100 POPs and continues to expand rapidly.

It is clear from the above analysis that combining the Internet backbones of MCI/WorldCom and Sprint will result in an unacceptable increase in the dominance of the global Internet backbone capacity. Estimates of the market share of the combined entity range from around 48% to about 70%.

4.   MCI/WorldCom and Sprint: Marketplace Scenarios

The combination of the Internet backbones of MCI/WorldCom and Sprint will result in the following marketplace scenarios:[30]

* A dominant Internet backbone provider will be able to raise prices to non-core backbone providers because there are no perfect or even close substitutes for the services the dominant company provides.

* A company with a large and dominant share of the Internet backbone market will be able to reduce the quality of interconnection to other backbone providers, or may have incentives to disconnect from them entirely. The dominant firm may also use an actual or implicit threat of disconnecting so as to impose higher charges on the smaller core backbone providers. Peering may also be discontinued by the dominant firm. Indeed, Telstra Corporation refused to provide interconnection to a new entrant, Cable & Wireless Opus during 1997-98.[31] Telstra refused to peer in spite of the fact that Cable & Wireless Opus has an established global reputation, it has a national ATM Internet backbone in Australia, it has substantial international capacity, and traffic levels between the two networks were roughly equivalent.

* Huge barriers to entry occur whenever a dominant firm asserts control over a particular market. The dominance of a single company chills market entry by potential market entrants because of the significantly added costs and risks associated with market entry and added difficulties in developing a customer base sufficient to reach business viability. Front end, fixed costs of deploying new Internet backbone networks, including software development, are high – and risky. This complicates market entry because MCI/WorldCom has already established market dominance, even before a merger with Sprint, has built a customer base and can spread its fixed costs over more customers, lowering its average cost per customer below the average cost of later entrants. MCI/WorldCom's lower average cost per customer also disadvantages smaller incumbent backbone competitors, and thus makes network expansion more risky for the incumbents who may begin to lose market share as customers – old and new – flock to the dominant carrier because of real or imagined fears regarding the viability of the smaller and weaker competitors. Building a customer base is key to creating market power. Rapid customer

growth allows MCI/WorldCom to spread its network costs – the vast majority of which are fixed, over a larger customer base, thereby lowering its average cost per subscriber. As the cost per subscriber falls, MCI/WorldCom, with its greater size, scale and scope, can lower prices while maintaining or even increasing profit margins. Lower prices, in turn, attract more customers and add to MCI/WorldCom's power as it moves from dominance to monopoly. MCI/WorldCom is exploiting Metcalfe's Law, which holds that the value of communications networks increase by the number of users squared.

* A dominant company in the Internet backbone market will encourage the consolidation of other, smaller companies, in an attempt to survive. In the event that this happens, competition will be further diminished and, in any event, the dominance of MCI/WorldCom-Sprint will still not be hampered or curtailed. Indeed, its dominance may be advanced as risk averse, globally located customers move to the safety of the dominant player.

* The deployment of Integrated Digital Networks ("IDNs") such as the MCI/WorldCom Internet backbone represents the single largest step in the transition from a circuit-switched, narrowband network to a packet-switched, broadband infrastructure. How rapidly the technology is deployed, by whom and at what prices have important implications for users of the Internet and e-commerce – in other words for much of the U.S. and the global economy. If MCI/WorldCom, et al, with its control over Internet backbone, elects not to open its network to competitors, or chooses to charge higher prices for access, then it will dilute the potential and importance of the network, resulting in a slower deployment of the technologies that are becoming available under a more competitive environment.

5.   Likely Future Effects/Scenarios

The best research and analysis regarding likely future effects and scenarios concerning the dominance of an Internet backbone company was conducted by Charles River Associates, Inc., in April, 1998. The EC decision on the merger of MCI and WorldCom, already cited, above, also sheds valuable light on the issue.

Ironically, the Charles River study was undertaken at the request of the Sprint Corporation and was presented to the FCC as part of Sprint's opposition to the merging of the

MCI and WorldCom Internet backbones. The paper, authored by Stanley Besen, Padmanabhan Srinagesh and John Woodbury made the following pertinent points:

* MCI/WorldCom would find it profitable to disadvantage other backbone providers because costs to dominant providers are less than those to customers of smaller core backbone providers.

* Any combination increases the amount of traffic captured by MCI/WorldCom, thus reducing the cost it incurs from reducing the quality of service to smaller backbone companies.

* The merger will create entry barriers to potential core network providers because they will have to enter the market at a larger scale. Any new entrant would have to have a large market share in order to compete equally and effectively. If market entry fails, significant costs will accrue to the failed entity. Any potential entrant, if it cannot guarantee a large market share, will be relegated to paying "significant" interconnection fees or becoming a customer of an existing backbone provider.

* If MCI/WorldCom degrades the quality of interconnection with incumbent core backbone providers, or disconnects from them, other ISPs and consumers may be induced to switch to MCI/WorldCom in order to guarantee quality of service.

* A merger will result in other mergers causing greater consolidation and reducing competition in an already consolidated Internet backbone market.

Almost two years later, the paper presented by Sprint seems remarkably prophetic.

The EC, in ordering MCI/WorldCom to divest MCI's Internet backbone, said that the combination of "WorldCom and MCI would create a network of such absolute and relative size that the combined entity could behave to an appreciable extent independently of its competitors and customers. This will impact on consumers in Europe as much as on any other consumers. WorldCom's principal Internet subsidiary, UUNet, already has a very substantial size by comparison with its competitors. The fact that it is already dominant may be inferred by its decision in early 1997 to attempt (an attempt which ultimately failed) to unilaterally cease peering with a number of its existing peers. Since that time WorldCom has already gained additional market power by the acquisition of ANS and CNS. As a result of the union with MCI,

there can be little doubt that the critical mass would be achieved for acting independently of competitors."[32] This is identical to the scenario created by the merger of WorldCom's and Sprint's Internet backbones.

The EC concluded that any merger of major Internet backbone providers would create the following strategies on the part of the dominant Internet backbone, namely WorldCom:

* As a dominant entity, WorldCom would pursue various stratagems to reinforce its market position. These would likely follow two broad approaches: One would be to raise rivals' costs; two would be to price selectively to attract customers away from competing networks.

* WorldCom would control market entry by denial of new peering requests, foreclosure or the threat of foreclosure of peering arrangements, and/or their replacement with paid interconnection.

* If a competitor wishes to peer (or to continue peering), MCI/WorldCom could control the quality of service offering by its decisions on the management of the link. MCI/WorldCom could degrade the offering of competitors, for example, by deciding not to upgrade the capacity at private peering points. Although this would degrade the quality of service for both MCI/WorldCom and the competitor concerned, the competitor would be hurt to a greater extent, because its customers would lose connectivity to a larger portion of the Internet than MCI/WorldCom's customers. Proportionally, the percentage of traffic affected by such a strategy would be higher for the smaller network. MCI/WorldCom's chances of implementing such a strategy might well be improved by picking off customers and competitors one by one, rather than attempting to take on the rest of the market in one step.[33]

Multi-homing was dismissed by the EC as a potential competitive reaction to the dominance of a single Internet backbone provider.[34] MCI/WorldCom's focus on multi-homing ignores the fact that many of the currently multi-homed customers were multi-homed to MCI and WorldCom, rather than, for example, to one of the merging parties and a third party. Additionally, multi-homing is not simple because it requires the operation of a particular protocol, nor is it cheap, because it involves the expense of two transit connections where competitors might be paying for only one. Finally, a dominant network could impede multi-

homing by a variety of tactics, including a refusal to deal with multi-homing customers; degradation of connection to such customers or refusal to offer the protocol; or simply offering volume discounts which would favor higher usage single-homed customers.

6.   Policy Implications

The policy implications stemming from MCI/WorldCom's acquisition of Sprint's Internet backbone can be stated succinctly:

* The acquisition of Sprint's backbone will increase the dominance of MCI/WorldCom in the U.S. and global Internet Backbone Market. This will have an adverse effect on competition, customers, and, perhaps, technology.

* The increase in MCI/WorldCom's dominance will harm competition. Competitors to MCI/WorldCom are already weak relative to the dominant firm and their weakness will be intensified by the merger of MCI/WorldCom and Sprint. The weaker incumbent Internet backbone providers will thus have no alternative but to merge and, even so, will remain in a weaker position vis-à-vis MCI/WorldCom. Further, likely new competitors will be extremely reluctant to risk market entry because of the prohibitive costs of building a network and recruiting customers. This is because Metcalfe's Law kicks in, namely that the value of communications networks increase by the number of users squared. As a result, MCI/WorldCom is adopting a strategy that will give it an unassailable competitive advantage over all of its rivals – it will spread its extremely high fixed costs over more customers, thus lowering the average costs of current and later market entrants. In this way, MCI/WorldCom will have an unparalleled position in the Internet backbone market. Competition, therefore, will be harmed as a result of the merger.

* Customers will also be harmed by the growing dominance of MCI/WorldCom in the Internet backbone market. Not only will they have fewer choices but those not connected to the dominant provider will confront rising prices that will ultimately induce them to join the dominant provider. Other customer effects include the potential for service and network degradation, higher prices and technical problems associated with multi-homing and address portability, and the potential for price discrimination and cross-subsidization, favoring large customers over smaller ones.

* With the market controlled by a powerful and increasingly dominant company, innovation and technological develop and diffusion may be hampered. This is because the dominant firm will have fewer incentives to offer interconnection with "peers" because there will be no peers. The Internet backbone may thus be degraded as opposed to upgraded with adverse effects imposed on innovation, technology, competitors, and customers.

Policy makers are left with only two alternative courses of action:

     (1)   Intensified regulation of the combined entity, and

     (2)   The complete divestiture of UUNet as a stand alone company.

Intensified regulation may be unpalatable in today's dynamic telecommunications-information-entertainment industry environment, but it must be considered given the implications of MCI/WorldCom's $129 billion acquisition of Sprint.

At a minimum, the FCC must impose a competitive checklist compliance plan (similar to the one embodied in The Telecommunications Act of 1996) on MCI/WorldCom whereby the company would have to:

     (1)   Interconnect in accordance with the requirements of sections 251(c)(2) and 252(d)(1) of the Act.

     (2)   Offer nondiscriminatory access to Internet backbone network elements at just and reasonable rates.

     (3)   Give nondiscriminatory access to poles, ducts, conduits, and rights-of-way owned and/or controlled by MCI/WorldCom at just and reasonable rates.

     (4)   Solve portable address problems. Only 10% of the ISPs "own" their own portable addresses. The vast majority rely on addresses assigned from their Internet backbone provider. It is difficult and costly for an ISP to change a backbone provider because the ISP must renumber its entire network and that of its customers as well.

     (5)   Unbundle specific network components and elements so that competitive resellers and/or network operators may compete more effectively.

     (6)   Open up Internet backbone related databases and access to such services or information as are necessary to allow a competitor to "peer".

(7)   Deal with non-affiliated resellers and competitors in a non-discriminatory fashion.

An alternative policy scenario is to force the divestiture of UUNet because divestiture of Sprint's Internet assets will not cure the anti-competitive effects. In fact, the divestiture of MCI's Internet backbone is a perfect case study. The divestiture involved the same acquirer, the same industry segment, and the divestiture of a business with the same essential characteristics. The seller, MCI, demonstrated perhaps an understandable reluctance to create a separate, stand alone business capable of providing effective competition. In short, Cable & Wireless's experience demonstrates that divestiture of Sprint's Internet business will not preserve or enhance competition, but will merely give MCI/WorldCom another opportunity to increase its own market dominance.

An acceptable alternative is the divestiture of UUNet, which is far less integrated with non-Internet businesses. MCI/WorldCom officials have said that although UUNet has some integration into WorldCom, it is much more freestanding than the MCI Internet business ever was.[35]

PART IV.   EFFECTS OF MERGER ON COMPETITION, CUSTOMERS, PRICES & TECHNOLOGY

MCI/WorldCom is a dominant and pervasive force in the U.S. and global Internet backbone market. Its market power will be increased substantially as a result of its proposed merger with Sprint. The combined entity will have serious negative effects on competition, customers, prices and technology. Since there are no perfect or close substitutes to Internet backbone providers, major competitive, customer, costing and pricing, and technology problems will occur in the event that a single entity begins to establish monopoly power.

The market for Internet backbone capacity is already tight, with the top five backbone firms accounting for 84% of the market's combined revenues. Two of the competitors, AT&T and Cable & Wireless are new to the Internet backbone market, and the third, GTE/BBN is the likely subject of FCC and DOJ conditions (stemming from the merger of Bell Atlantic and GTE) thus creating marketplace uncertainties for the company. Only two of the five backbones operate in a stable operating environment, namely those of MCI/WorldCom and Sprint. Furthermore, MCI/WorldCom's market share, using the most conservative estimates, is currently greater than

the combined shares of GTE, AT&T, and Cable & Wireless. With the integration of Sprint, the Internet backbone market would be dominated by a single firm, with a conservatively estimated market share in excess of 50%. This would give the combined company the ability and the incentives to advance its reach in order to control the entire market for Internet backbone capacity.

The top tier Internet backbone providers, as has been demonstrated in this paper, sit on top of, and control, the Internet and World Wide Web pyramid. Everyone wishing to access the Internet and World Wide Web must utilize the facilities of a backbone operator. This is because the Internet began with a national and global backbone designed to serve disparate research and governmental institutions, and then moved down the customer chain to the local level. As a consequence, Internet backbone providers control a vital bottleneck. They represent an essential link between millions of customers distributed throughout the world, who must access the backbone in order to communicate and/or do business with other customers. This is why the FCC and the DOJ must participate actively in an intensive study of the effects of the MCI/WorldCom acquisition of Sprint. Policymakers must study not only the Internet backbone market, but also its relationships with other telecommunications-information markets. As pointed out by the EC (see above) Internet backbone is "effectively one global market."

Because of the dominance and pervasive market power of MCI/WorldCom in the U.S. and global Internet backbone market, the market is in danger of "tipping" toward a monopoly. A market is susceptible to tipping if potential competitors are unable to supply or induce the market to supply Internet backbone services and other complementary communications services at prices that are competitive with the leading firm.[36] There is a clear and present danger of this situation occurring in the event that MCI/WorldCom acquires Sprint.

If the two companies are combined, as proposed, a single entity will possess an equal or greater market share in complimentary services, for example consumer long distance voice, business long distance voice, long distance data (except IP), IP standing alone, along with Internet backbone capacity.[37]

The President and CEO of MCI/WorldCom, Bernie Ebbers, is the prime architect of the company's strategies and has spoken enthusiastically about his motives in acquiring the assets of Sprint: "This merger is about more than wireless...This merger is about growth."[38]

Technological developments will not prevent the Internet backbone market from being tipped toward a monopoly. Indeed, as has been demonstrated in earlier chapters of this paper, MCI/WorldCom is presently able to control technology diffusion because of its marketplace dominance. Consequently, the methods by which a backbone provider of the size of MCI/WorldCom is able to retain and enlarge its client base as it tips toward monopoly control of the Internet backbone market will not change unless there is regulatory and antitrust intervention.

In order to keep the Internet backbone market competitive, without maintaining rigorous regulatory oversight, the FCC, DOJ, and the EC must condition approval of the merger upon an effective divestiture of the Internet backbone of MCI/WorldCom, namely that of UUNet. This would leave a competitive marketplace intact, eliminate the risk of tipping, and would mitigate the need for ongoing regulatory oversight and intervention.

Without the divestiture of UUNet, the merger will result in a series of negative effects:

* New Internet backbone providers would be extremely reluctant to enter the market. The combined entity would be able to dramatically lower average network cost per customers, stimulate dramatic growth in its customer base thereby further reducing costs, and Metcalfe's Law would apply. This says that the value of the network increases by the number of users squared. At this point, the Internet backbone market would tip toward monopoly – a monopoly favoring the combined entity.

* In an attempt to survive, there would be further consolidation in the Internet backbone market, but these consolidations would not be able to amass the market position and power of the combined entity.

* Interconnecting ISPs and backbone providers would be forced to pay higher prices to the combined entity.

* Degradation of interconnection for unaffiliated ISPs and carriers could be threatened – and could be carried out – thus increasing the strength and domination of the combined entity.

* There would be adverse effects on peering and settlement arrangements. Indeed, the combined entity would be without peers.

* Prices will increase for consumers and businesses who connect to the combined company's Internet backbone via other ISPs or Internet backbone providers.

* The universal and global spread of Internet and World Wide Web services may be hampered. This is because local and regionally based entities will be reluctant to undertake the significant investment needed to deploy newly emerging technologies, such as xDSL, IP telephony, innovative transport methods or application services. Since the costs of deploying high speed broadband services are high and the rewards to entities such as incumbent local exchange carriers ("ILECs") and competitive local exchange carriers ("CLECs") may be limited in the event that a single entity dominates the backbone market, and is able to control prices and interconnection agreements.

In summary, the Internet backbone market is highly concentrated in the hands of MCI/WorldCom and is rapidly becoming more so. Deployment of Integrated Digital Networks ("IDNs") such as the MCI/WorldCom Internet backbone represent a giant step in the transition from a circuit-switched, narrowband network to a packet-switched, broadband infrastructure. How rapidly new technologies are deployed, by whom and at what prices have important ramifications for users of the Internet and e-commerce – in other words for much of the U.S. and global economy. If MCI/WorldCom, with its increasing control over Internet backbone and its rapidly expanding global reach, elects not to open its network to competitors, or chooses to charger higher prices for access, then it will dilute the potential and importance of the network. This will result in a slower deployment of the technologies that are becoming available under a more competitive environment and will slow down global economic growth.

Therefore, the simplest way to avoid these serious marketplace negatives is to order the divestiture of UUNet as a stand alone Internet backbone providers, thus stimulating a number of positive competitive, customer, and technological effects.

PART V.   FINDINGS AND POLICY RECOMMENDATIONS

1.   Findings

* Internet backbone is already a highly concentrated U.S. domestic and global market and is rapidly becoming more so.

* Internet backbone revenues are about to increase dramatically as a result of a rapid rise in the numbers using the Internet and the World Wide Web, an increasing demand for bandwidth on the part of business and other institutions, and an increasing number of applications and services.

* The Internet backbone and the World Wide Web have become critically important to the smooth functioning of businesses and other institutions. Indeed, the Internet and the Web have been major contributors to U.S. and global economic growth from the mid-1990s on. This vital economic link will be more important in the future.

* Although several companies claim that they are in the midst of network backbone build-outs, with some attracting vast sums of money from investors, there is little tangible infrastructure to date to compete with the so-called Tier One Internet backbone providers.

* By any measure – revenues, number of customers, number of POPs, bandwidth, infrastructure investment -- MCI/WorldCom is the world's dominant Internet backbone provider, with market shares measured and/or estimated at 50% or more, without its acquisition of Sprint.

* The Internet backbone dominance of MCI/WorldCom will be significantly enhanced by the acquisition of Sprint. As one MCI/WorldCom noted, prior to the announced Sprint merger: "There really isn't anyone with our network and reach." The primary danger of an MCI/WorldCom and Sprint combination is that the Internet backbone market would be tipped into a monopoly situation, with a number of serious negative effects. Indeed, applying the DOJ and FTC horizontal merger guidelines, known as the HHI, the merger of MCI/WorldCom and Sprint should be disallowed because it will result in adverse effects for competition and consumers. This is because UUNet is already on the brink of monopoly, and its market power and dominance will continue to increase as long as it is integrated into MCI/WorldCom, a dominant force in the provision of consumer and business long distance voice, long distance data and IP.

2.   **Policy Recommendations**

* UUNet, the Internet backbone arm of MCI/WorldCom, should be divested as a primary condition of the merger of MCI/WorldCom and Sprint. Unless this divestiture is ordered,

then a number of negative effects will be felt by competitors, consumers, pricing, and technology. These negative effects are intolerable and could result in serious adverse effects on the U.S. and global economy.

* Divestiture of Sprint's Internet backbone would not be sufficient to overcome the adverse effects of the merger as enumerated and documented in this report. Sprint's Internet backbone is integrally integrated into Sprint's overall telecommunications-information operations and, in that respect, is similar to MCI's Internet backbone which was subject to an order of divestiture by the EC. The divestiture, to Cable & Wireless, did not accomplish the positive competitive and consumer effects hoped for by the EC. Indeed, MCI, as a reluctant seller, has effectively sabotaged the divestiture in order to strengthen its competitive position as part of MCI/WorldCom.

* In the event that a divestiture of UUNet is not mandated, then the FCC, the DOJ, and the EC must become involved in daily, ongoing, rigorous regulation of the activities of dominant firms such as MCI/WorldCom in order to see that competition, consumers, and the public interest are protected.
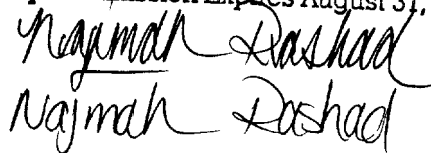
AFFIDAVIT OF ALAN PEARCE

I, Alan Pearce, hereby swear, under penalty of perjury, that the foregoing is true and correct, to the best of my knowledge and belief.

Alan Pearce

Alan Pearce

Dated: 2/18/00

My Commission Expires August 31, 2004

Najmah Rashad

Najmah Rashad